

Pregnancy outcome among native Indians in Saskatchewan

Lindsay Edouard, MRCOG, MFCM; Debra Gillis, BSHEc, MHSc; Brian Habbick, MB, FRCPC

Objective: To determine the difference in pregnancy outcome between native Indians and the provincial population in Saskatchewan.

Design: Retrospective analysis of data collected from all birth and death registration forms.

Setting: Saskatchewan.

Main outcome measures: Incidence of low birth weight and rates of stillbirth and of neonatal and infant death.

Results: The neonatal death rate was higher in the Indian population than in the provincial population during the study period; the difference between the two groups in the rate decreased markedly after 1982. The rates of stillbirth and infant death were also higher among the Indians, and the difference persisted during the study period. The incidence of low birth weight and the rate of stillbirth were highest in the youngest and oldest maternal groups in the provincial population; however, the pattern was markedly different among the Indians, teenaged mothers having the best outcomes.

Conclusion: Further studies are needed to determine the relation between maternal age and fetal outcome among native Indians.

Objectif : Déterminer la différence dans l'issue de la grossesse entre les autochtones et la population provinciale de la Saskatchewan.

Conception : Analyse rétrospective de données collectées à partir de toutes les formules d'enregistrement des naissances et des décès de 1980 à 1986.

Milieu : Saskatchewan.

Principales mesures des résultats : L'incidence du faible poids de naissance et les taux de mortinatalité et de mortalité néonatale et infantile.

Résultats : Le taux annuel de mortalité néonatale était plus élevé chez les autochtones que dans la population provinciale au cours de la période étudiée; la différence de taux entre les deux groupes a nettement diminué après 1982. Les taux annuels de mortinatalité et de mortalité infantile étaient également plus élevés chez les autochtones, et la différence s'est maintenue au cours de la période étudiée. La plus forte incidence de faible poids de naissance et le taux de mortinatalité le plus élevé appartenaient au groupe d'âge des mères les plus jeunes et les plus vieilles dans la population générale; la répartition était toutefois particulièrement différente chez les autochtones, les mères adolescentes ayant les meilleurs résultats.

Conclusion : Des études supplémentaires sont nécessaires pour déterminer la relation entre l'âge maternel et l'issue foetale chez les autochtones.

From the Department of Community Health and Epidemiology, College of Medicine, University of Saskatchewan, Saskatoon, Sask., and the Medical Services Branch, Saskatchewan Region, Department of National Health and Welfare, Regina, Sask.

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Reprint requests to: Dr. Lindsay Edouard, Department of Community Health and Epidemiology, College of Medicine, University of Saskatchewan, Saskatoon, SK S7N 0W0

In Canada registered Indians are native Indians recognized by the federal government as having Indian status. In 1986 there were about 65 000 registered Indians in Saskatchewan, among whom about 2000 births occurred. They have had consistently worse health indices than the rest of the province,¹ and this inequity has been addressed through the provision of specially targeted services such as health centres with dedicated staff employed by the Medical Services Branch, Department of National Health and Welfare.

This study was prompted by a review of the health status of the Saskatchewan population performed by the Department of Community Health and Epidemiology, University of Saskatchewan.² Given the current interest surrounding health inequities our study was aimed at determining any difference in pregnancy outcome between registered Indians and the provincial population in Saskatchewan. Special attention was paid to maternal age because of its strong relation to pregnancy outcome.^{3,4}

Methods

Data routinely collected from birth and death registration forms and published in the annual reports of the Vital Statistics Branch, Saskatchewan Department of Health, were supplemented by further data on registered Indians from the Medical Services Branch of the federal government. Differences between registered Indians and the provincial population were sought.

The following indices were calculated: the incidence of low birth weight (the number of live newborns with a birth weight of 2500 g or less divided by the total number of live births), the stillbirth rate (the number of stillbirths at 20 weeks' gestation or later divided by the number of total

births) and the neonatal mortality rate (the number of deaths in the first 28 days of life divided by the number of live births). Three-year moving averages were calculated for registered Indians whenever the numerators were small. Numerators and denominators were summed up separately for the adjacent years before the final division.

Results

The neonatal death rate was higher in the Indian population than in the provincial population; the difference between the two groups in the rate decreased markedly after 1982. The rates of infant death and stillbirth were much higher in the Indian population than in the provincial population (Table 1).

The stillbirth rate (Table 2) and the incidence of low birth weight (Table 3) were highest in the youngest and oldest maternal groups for the province as a whole. However, markedly different patterns were observed among the Indians: the stillbirth rate increased with increasing maternal age, and the incidence of low birth weight increased until the maternal age of 25 years, when it reached a plateau.

Discussion

Our study was limited by the availability of data in the birth registration forms and the subsequent aggregation of those data in the annual government reports.

The reduction in the gap between the Indians and the provincial population in the neonatal death rate after 1982 was not likely due to bias from changes in reporting practice. Because almost all births in Saskatchewan occur in hospital and neonates are followed up closely, similar care is provided to all neonates. The difference is likely an example

Table 1: Mortality rates among registered Indians* and in the provincial population in Saskatchewan

| Year | Stillbirth rate† | | Neonatal death rate‡ | | Infant death rate‡ | |
|------|-----------------------|---------|-----------------------|---------|-----------------------|---------|
| | Provincial population | Indians | Provincial population | Indians | Provincial population | Indians |
| 1980 | 7.6 | 12.0 | 6.0 | 16.6 | 11.3 | 28.1 |
| 1981 | 7.9 | 10.0 | 6.5 | 13.7 | 11.8 | 23.3 |
| 1982 | 7.8 | 11.7 | 6.4 | 11.6 | 10.5 | 19.6 |
| 1983 | 7.0 | 12.4 | 5.8 | 6.2 | 10.1 | 17.2 |
| 1984 | 7.1 | 14.1 | 5.6 | 6.7 | 9.4 | 17.8 |
| 1985 | 6.1 | 11.3 | 6.8 | 6.2 | 11.0 | 16.4 |
| 1986 | 6.1 | 9.4 | 5.5 | 6.6 | 9.0 | 15.6 |

*Three-year moving averages were used for registered Indians.

†Number of stillbirths per 1000 total births.

‡Number of deaths per 1000 live births.

Table 2: Stillbirth rate by maternal age in Saskatchewan from 1984 to 1986

| Maternal age, yr | Provincial population | | | Indians | | |
|------------------|-----------------------|---------------------|------------------|--------------------|---------------------|------------------|
| | No. of stillbirths | No. of total births | Stillbirth rate* | No. of stillbirths | No. of total births | Stillbirth rate* |
| < 20 | 58 | 5 767 | 10.1 | 14 | 1 517 | 9.2 |
| 20-24 | 104 | 17 514 | 5.9 | 18 | 1 923 | 9.4 |
| 25-29 | 103 | 19 531 | 5.3 | 12 | 1 039 | 11.5 |
| 30-34 | 54 | 8 952 | 6.0 | 7 | 388 | 18.0 |
| ≥ 35 | 28 | 2 272 | 12.3 | 6 | 179 | 33.5 |
| All | 347 | 54 036 | 6.4 | 57 | 5 046 | 11.3 |

*Number of stillbirths per 1000 total births.

Table 3: Incidence of low birth weight by maternal age in Saskatchewan from 1984 to 1986

| Maternal age, yr | Provincial population | | | Indians | | |
|------------------|--------------------------|--------|----------------------------------|--------------------------|-------|----------------------------------|
| | No. of infants ≤ 2 500 g | All | Incidence of low birth weight, % | No. of infants ≤ 2 500 g | All | Incidence of low birth weight, % |
| < 20 | 325 | 5 709 | 5.7 | 71 | 1 503 | 4.7 |
| 20-24 | 908 | 17 410 | 5.2 | 119 | 1 905 | 6.2 |
| 25-29 | 952 | 19 428 | 4.9 | 87 | 1 027 | 8.5 |
| 30-34 | 474 | 8 898 | 5.3 | 32 | 381 | 8.4 |
| ≥ 35 | 144 | 2 244 | 6.4 | 14 | 173 | 8.1 |
| All | 2 803 | 53 689 | 5.2 | 323 | 4 989 | 6.5 |

of well-organized health care compensating for social disadvantage. This is in sharp contrast to recent trends in the United States, where similar indices among black people have deteriorated.⁵

The persistent difference between the two groups in the postneonatal death and stillbirth rates, although narrowing, may indicate a decreased ability of the health care system to address postneonatal death and stillbirth, both of which depend largely on standards of living and access to health care.^{6,7}

Cross-sectional studies have repeatedly demonstrated a J-shaped curve for the relation of the stillbirth rate and the incidence of low birth weight to maternal age, worse outcomes occurring among teenagers and older mothers.^{3,4,8} In our study similar patterns were observed in the provincial population but not in the registered Indian population. In the latter group the rate of infant deaths and the incidence of low-birth-weight infants was lower among the teenaged mothers than among the older mothers; this could have been due to the traditional lifestyle of the Indians, with social support from the extended family. On the other hand, the unusually high incidence of low-birth-weight babies among the Indian mothers aged 20 to 35 years could have been due to adverse lifestyle conditions such as inadequate nutrition or use of tobacco, alcohol or other drugs.

The above explanations are only hypotheses.

Further research should be carried out to determine the cause of the relation between maternal age and fetal outcome among registered Indians.

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